WATERSHED CHARACTERIZATION

NG edits – 3/13/07

Climate

Climate is a basic element that affects soil development, streamflow regime, and vegetation dynamics. As in the rest of northern Idaho, the climate of the The Island is dominated by Pacific maritime air masses and prevailing westerly winds. Over 85 percent of the annual precipitation occurs during the fall, winter, and spring months. Cyclonic storms moving east from the Pacific Ocean produce long duration, low-intensity precipitation during this period of the year. During winter and spring, this precipitation is often in the form of rain at lower elevations and snow at mid to higher elevations, with persistent fog, cloudiness, and high humidity. The climate during the summer months is influenced by stationary high pressure systems over the northwest coast. These warm, dry systems result in only 10 to 15 percent of the annual precipitation falling during the summer.

Elevations in the Island assessment area range from about 1500 feet at the mouth of Deer Creek to 9,393 feet at He Devil. Annual precipitation ranges from less than 20 inches at the lowest elevations to over 40 inches at higher elevations (Molnau, 1993). Riggins has a mean annual precipitation of 16.6 inches. Mountain sites at Seven Devils Guard Station and Pittsburg Sadde have XX.X and XX.X inches, respectively. In Riggins, the mean daily maximum temperature in July is 92.7° F and the mean daily minimum temperature in January is 27.9° F (Abramovich, et al, 1998).

Stream and vegetation disturbances in the Island are influenced by relatively short term weather events. Flood events at the scale an entire watershed are most often associated with frontal rainstorms falling on snow. Such events can occur from December through May. Significant rain on snow events can be expected to occur on a return interval of about once in twenty years. Occasionally, rapid snowmelt in the absence of rain can also produce a flood event. This would typically occur in April to June, when air temperatures and warm wind can produce rapid melt. Within the Island, this is mostly likely to occur in Rapid River and less so in the smaller watersheds to the north. Smaller scale floods can occur in response to localized spring or summer thunderstorms. These events can produce landslides and debris torrents in the breakland streams. They can also result in surface erosion events in the uplands.

Fire frequency and severity are in large part determined by summer weather conditions, such as ignition by lightning, air temperature, humidity, and wind. The most severe and extensive fires occur after periods of prolonged hot, dry conditions. The passage of a dry cold front, with associated winds, can drastically alter fire behavior, increasing the severity of the disturbance. Aside from weather, vegetation conditions and topography also greatly influence fire behavior.

Aquatic Landtype Associations

Aquatic Landtype Associations (ALTAs) are used to characterize landform and stream settings within the watershed. ALTAS consider both terrestrial and aquatic disturbance regimes, as well as landform, geology, and vegetation. They also incorporate elevation to account for the role of ground water temperature and base flows in limiting aquatic habitats, the relative significance of rain on snow at lower elevations, and the importance of sustained runoff from higher elevations. ALTAs are built from the component landforms, but also reflect the frequency of channel characteristics, in particular, their size and gradient. Within each ALTA, certain stream channel types predominate and interpretations can be made as to how these streams function.

In the Island assessment area there are eight ALTA mapping units (see Map X). ALTAs 3 and 7 are low to mid elevation breaklands and are associated with XX percentage of the area. ALTAs 3 and 7 are those areas that lie below 5000 feet and are high relief and steep slopes, with high and moderate gradient channels except in the large order streams. Channels are usually highly confined in v-shaped valleys. Larger order streams historically provided important spawning and overwintering habitat. Snowpack is typically low, and rain on snow events can occur, with snowmelt often rapid. Peak flows may be flashy. Fire disturbance is short and moderate interval, moderate size (several hundred to several thousand acres), and low severity or mixed. In ALTA 3 mass wasting and debris torrents are major agents of channel changes. In ALTA 7 erosion hazards are lower than in ALTA 3, and the channels may be more resistant.

ALTA 10 and ALTA 18 are alluvial valleys and with ALTA 10 at low elevation with large order streams and ALTA 18 at mid- to high elevation. Slopes are less than 5 percent. Rivers are usually moderately confined in the ALTA 10. In the ALTA 18 rivers are not resistant or resilient. These areas historically provided important overwintering habitat and some spawning and rearing habitat for anadromous species.

ALTA 15 is the area of basalt plateaus lying at mid-elevation, between 4000 and 6000 feet. They are of low relief, with moderate and low gradient channels. Channels are fairly resistant and resilient. They historically provided habitat primarily for resident fish. Snowpack is typically moderate, rain on snow events unlikely, and runoff is sustained. Fire disturbance is moderate intervals, moderate size, and of mixed severity. The Island Assessment area has approximately XX percent of lands within the ALTA 15.

ALTA 2 and 11 comprise the remaining area of the Island. These are high relief areas typically between 4500 and 8000 feet elevation. Channels are high and moderate gradient and mostly low order. These channels may have provided some habitat for resident fish in more moderate gradient reaches. Snowpack is high and snowmelt usually sustained with groundwater temperatures cold. Stream baseflows are usually sustained. Fire disturbance is of long intervals with moderate size and mixed or lethal severity.

Watershed Delineations, Characteristics and Conditions

Several watershed delineation systems have been in use over the past twenty-five years. The US Geological Survey developed the Hydrologic Unit Code system to the 4th code (subbasin scale) in the 1970s. By 1980, the Nez Perce National Forest had delineated watersheds and subwatersheds to the 5th and 6th code level. These 6th code subwatersheds were used in the 1987 Forest Plan and were called prescription watersheds. Sediment yield and ECA modeling is currently done using prescription watersheds, or aggregates thereof.

In the 1990s, the Interior Columbia River Basin (ICRB) project created a new 5th and 6th code delineations for the upper Columbia River Basin. These are still in use for certain applications, most recently as the sampling scale for the Pacfish/Infish Biological Opinion (PIBO) monitoring effort. The ICRB watersheds are not referred to in the Island EAWS.

In 2002, national interagency standards were issued by the Federal Geographic Data Committee for 5th and 6th code watershed and subwatershed delineations. These delineations are commonly referred to as the Water Boundary Dataset (WBD). As of 2007, these delineations are undergoing final review in Idaho. These delineations are being used in the Nez Perce Forest Plan revision and are the basis of the watersheds used for most applications in the Island EAWS.

Table x.x - Island Subwatersheds and Respective Hydrologic Unit Codes

Prescription Watershed #	Subwatershed Name	Water Boundary Dataset (WBD) Watershed #	Island EAWS Subwatershed Name
170602090401	Deer Creek	170602090503	Deer Creek
170602090402	Joe Creek	170602090501	Salmon River-Riverview
170602090403	Christie Creek	170602090503	Deer Creek
170602090404	Sherwin Creek	070602090305	Sherwin Creek
170602090405	China Creek	170602090303	China Creek
170602090406	Cow Creek	170602090303	China Creek
170602090407	Kessler Creek	170602090302	Race Creek
170602090408	South Fork of Race Creek	170602090302	Race Creek
170602090409	West Fork of Race Creek	170602090302	Race Creek
170602090413	Elfers Creek	170602090301	Squaw Creek
170602090414	Clark Creek (Bean Creek)	170602090301	Squaw Creek
		170602090303	China Creek
170602090499	Salmon Face Drainages	170602090305	Sherwin Creek
		170602090501	Salmon River-Riverview
170602100101	Squaw Creek	170602100505	Squaw Creek
170602100102	Shingle Creek	170602100404	Lower Rapid River
		170602100404	Lower Rapid River
170602100103	Rapid River	170602100402	Rapid River-Copper Creek
		170602100401	Upper Rapid River
170602100104	Indian Creek	170602100503	Little Salmon-Polack
170602100105	West Fork Rapid River	170602100403	West Fork Rapid River
170602100106	Papoose Creek	170602100505	Squaw Creek
170602100107	(portion of Squaw Creek)	170602100505	Squaw Creek
170602100108	(unnamed Trib. to Rapid River)	170602100404	Lower Rapid River
170602100109	(unnamed Trib. to Rapid River)	170602100404	Lower Rapid River
170602100199	Slaughter Gulch	170602100503	Little Salmon-Riggins

Table x.x - Island Subwatersheds - Acres by Management/Ownership

Subwatershed Name and HUC # (proposed NPNF plan)	Nez Perce National Forest (acres)	Payette National Forest (acres)	Private Ownership (acres)	Other (acres)	Water (Acres)	Total (acres)
Salmon River-Lucille 170602090301	990	0	5,338	1,282	120	7,729
Race Creek 170602090302	12,202	0	5,030	1,159	0	18,391
China Creek 170602090303	8,437	0	5,771	748	78	15,034
Sherwin Creek 170602090305	6,665	0	3,644	722	141	11,171
Salmon River-Riverview 170602090501	1,758	0	4,293	805	168	7,024
Deer Creek 170602090503	3,618	0	5,758	651	0	10,027
Upper Rapid River 170602100401	0	26,678	0	0	40	26,718
Rapid River-Copper Creek 170602100402	0	14,880	265	0	0	15,144
West Fork Rapid River 170602100403	16,821	5,070	77	0	56	22,024
Lower Rapid River 170602100404	12,197	0	4,102	203	0	16,502
Little Salmon-Polack 170602100503	3,009	454	5,062	31	0	8,557
Little Salmon-Riggins	0	0	1,765	576	0	2,341

170602100504						
Squaw Creek 170602100505	8,227	0	2,530	1,049	0	11,807

General Watershed Condition

Table x.x – Subwatershed Description and Condition Indicators *

Subwatershed (Proposed NPNF Plan)	Area (acres)	Land-slide Prone (acres)	Roads (miles)	Road Density (mi/mi²)	Timber Harvest (acres)	Timber Harvest (%)	ALTAs**
Salmon River – Lucille 170602090301	990	323	16.8	10.8	569	7	3,7,10, 15,18,99
Race Creek 170602090302	12,202	5,405	58.6	3.1	2,781	15	3,7,11, 15,18, 99
Salmon River - China Creek 170602090303	8,437	2,051	80.3	6.1	3,022	20	3,7,10, 11,15,18, 99
Salmon River – Sherwin Creek 170602090305	6,665	2,351	63.5	6.1	2,133	19	3,7,10, 99
Salmon River – Riverview 170602090501	1,758	426	26.3	9.6	1,125	16	7,10,99
Deer Creek 170602090503	3,618	1,839	21.2	3.8	932	9	7,10,18, 99
Upper Rapid River 170602100401	26,678	12,248	0	0	0	0	3,7,11
Rapid River –	14,880	14,475	7.1	0.3	517	3	3,7,11

Subwatershed (Proposed NPNF Plan)	Area (acres)	Land-slide Prone (acres)	Roads (miles)	Road Density (mi/mi²)	Timber Harvest (acres)	Timber Harvest (%)	ALTAs**
Copper Creek 170602100402							
West Fork Rapid River 170602100403	21,891	11,348	1.8	0.1	0	0	3,7,11, 18
Lower Rapid River 170602100404	12,197	6,805	28.3	1.5	1,358	8	3,7,11
Little Salmon – Pollack 170602100503	3,465	2,117	18.8	4.0	649	8	3,7,10
Little Salmon – Riggins 170602100504	0	0	0	0	0	0	3,7,10, 18
Squaw Creek 170602100505	8,227	3,957	25.4	2.0	939	8	2,3,7, 11,18

*table reflects acres and miles located on U S Forest Service managed lands only.

**Aquatic Landtype Associations:

ALTA 2: High elevation ridge and glaciated slope

ALTA 3: Breaklands, mid elevation, basalt

ALTA 7: Breaklands, low elevation, basalt

ALTA 10: Alluvial valleys, low elevation, large rivers

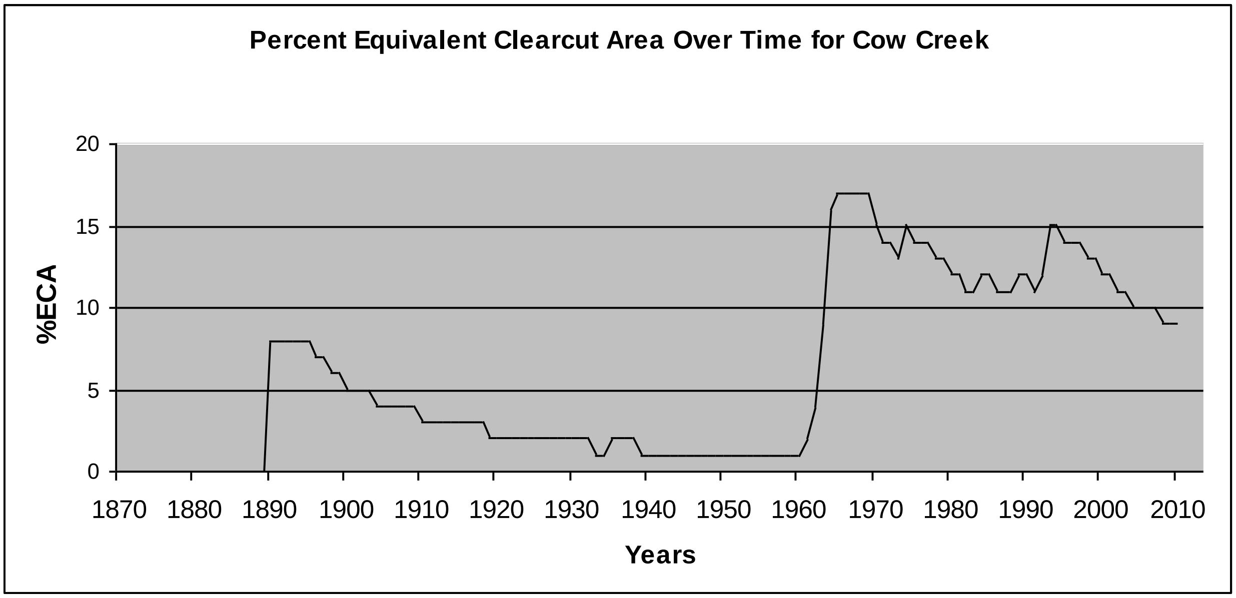
ALTA 11: Glaciated lands, all rock types, subalpine fir and whitebark pine habit types

ALTA 15: Plateaus, mid elevation, basalt

ALTA 18: Alluvial valleys, mid and upper elevation

ALTA 99: Water

Water Yield and Sediment Yield


Percent Equivalent Clearcut Area Over Time for Cow Creek
%ECA
0
5
10
15
20
1870
1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
Years

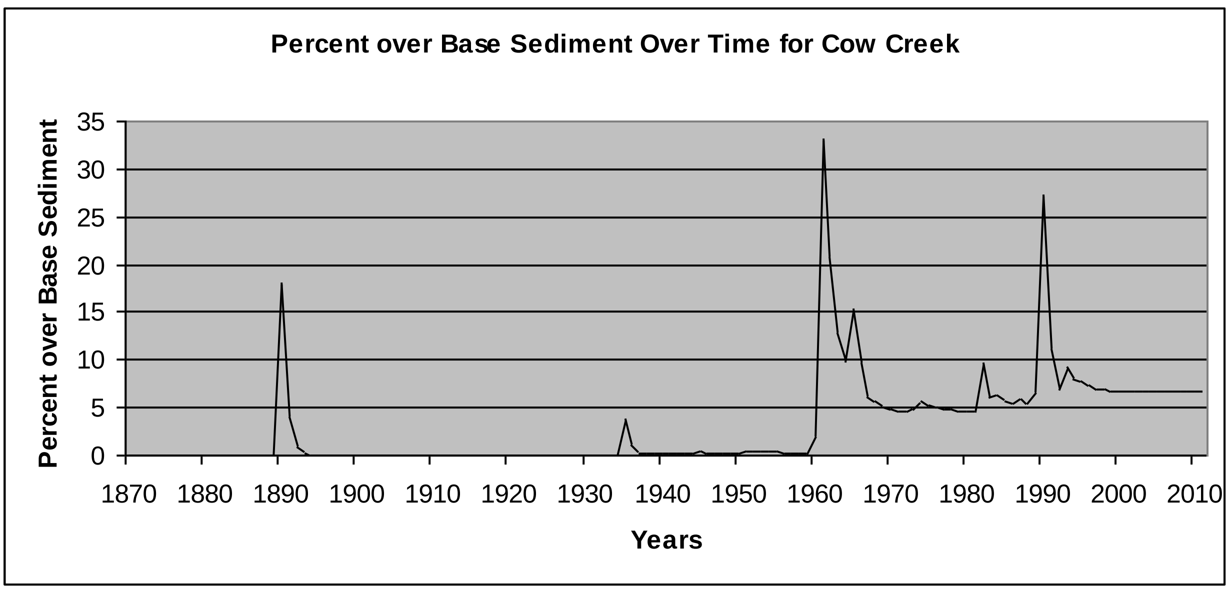

Percent over Base Sediment Over Time for Cow Creek
Percent over Base Sediment
0
5
10
15
20
25
30
35
1870
1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
Years

Table x.x - 1987 Forest Plan Guidelines, Existing Sediment Yield, and Existing ECA

Subwatershed (1987 NPNF Plan)	Stream Name	Beneficial Use	Current Fishery Habitat Potential (%)	Fishery Water Quality Objective (% Habitat Potential)	Forest Plan Sediment Yield Guideline	Forest Plan Entry Frequency Guideline	2006 Sediment Yield (% over base)	2006 ECA (% of watershed area)
170602090401	Deer Creek	No Fishery	--	70	60	3		
170602090402	Joe Creek	No Fishery	--	70	60	3		
170602090403	Christie Creek	R	70	70	60	3		
170602090404	Sherwin Creek	R	70	70	60	3		
170602090405	China Creek	R	70	70	60	3		
170602090406 1/	Cow Creek	R	70	70	45	2		
170602090407 1/	Kessler Creek	A	70	80	45	2	4	
170602090408 1/	S. Fork of Race Creek	A	50	80	45	2	2	
170602090409 1/	W. Fork of Race Creek	A	70	80	45	2	2	
160706020413	Elfers Creek	Undefined	--	--	Undefined	Undefined	1	
170602090414	Clark (Bean) Creek	Undefined	--	--	Undefined	Undefined	17	
170602100101 1/	Squaw Creek	R	40	80	45	2	1	

Subwatershed (1987 NPNF Plan)	Stream Name	Beneficial Use	Current Fishery Habitat Potential (%)	Fishery Water Quality Objective (% Habitat Potential)	Forest Plan Sediment Yield Guideline	Forest Plan Entry Frequency Guideline	2006 Sediment Yield (% over base)	2006 ECA (% of watershed area)
170602100102 1/	Shingle Creek	R	50	80	50	2		
170602100103	Rapid River	A	100	100	0***	0		
170602100104 2/	Indian Creek	R	50	70	60	3		
170602100105	W. Fork Rapid River	A	100	100	0***	0		
170602100106	Papoose Creek	No Fishery	--	70	60	3	1	
170602100107		Undefined	--	--	Undefined	Undefined		
170602100108		Undefined	--	--	Undefined	Undefined		
170602100109		Undefined	--	--	Undefined	Undefined		

1/ Sediment is the primary limiting factor in these streams. Timber management can occur in these watersheds, concurrent with improvement efforts, as long as a positive, upward trend in habitat carrying capacity is indicated.

2/ This stream is limited by either excessive natural sediment or has suffered major hydrologic events which will be difficult to correct. This stream does not have a significant fisheries resource and no restrictions of timber management activities are indicated.

*** These prescription watersheds, unlike most, are not true watersheds. By definition, a true watershed includes all the lands draining through a stream reach. These footnoted watersheds drain only part of such a hydrologic unit and generally contain the downstream reaches of relatively large streams. For sediment yield analyses on these downstream reaches, all upstream prescription watersheds are combined into a true watershed. Sediment yield guidelines apply only to true watersheds. Entry frequency guidelines apply to prescription watersheds regardless of whether they are true watersheds.

Water Temperature

Water temperature is an important water quality parameter for aquatic organisms which are affected by, and highly adapted to, its fluctuations. Water temperature varies temporally and spatially within the stream channel network. Temporal variations occur on a daily, seasonal, and annual basis. Spatial variation occurs between watersheds and from the headwaters of a watershed to its mouth. In any given stream reach, water temperature is dependent primarily on the water temperature coming into the reach, the volume of discharge, channel morphology, streamside shade, and weather.

Water Temperature Criteria

Water temperature criteria that currently apply to the Nez Perce National Forest come from six sources:

Idaho Water Quality Standards;

Environmental Protection Agency Rules;

Forest Plan Desired Future Condition (DFC) Tables;

PACFISH Interim Riparian Management Objectives (RMOs);

Matrix of Pathways and Indicators of Watershed Condition; and

Interior Columbia Basin Supplemental Draft Environmental Impact Statement.

These criteria apply in various ways. For example, the Idaho Water Quality Standards and EPA Regulations apply as legal direction for implementation of the Clean Water Act. The Forest Plan, as amended, carries similar legal direction for implementation of the National Forest Management Act. The Matrix of Pathways and Indicators of Watershed Condition (NMFS 1998) is a working tool used in consultation under Section 7 of the Endangered Species Act. The criteria from these sources are paraphrased in Appendix C.

E. Coli Bacteria Sampling

In 2005, the Nez Perce National Forest initiated a monitoring program for E. coli bacteria in several streams on the Island. The sampling was done as a prelude to the update of range allotment management plans and to determine if streams were meeting Idaho State Water Quality criteria for bacteria. The single sample criterion for secondary contact recreation is not to exceed 576 E.coli organisms per 100 ml of water.

Sample Site	Date	Location	E. Coli Results (MPN/100 ml)*
Rapid River	5/16/05	Above Hatchery	38
Squaw Creek	5/16/05	Forest Boundary	29
Bean Creek	5/16/05	Forest Boundary	74

Sample Site	Date	Location	E. Coli Results (MPN/100 ml)*
Cow Creek	5/16/05	Forest Boundary	31
Cow Creek	5/16/05	Forest Boundary	21
Rapid River	8/9/05	Above Hatchery	<3
Squaw Creek	8/9/05	Forest Boundary	<3
Bean Creek	8/9/05	Forest Boundary	460
Cow Creek	8/9/05	Forest Boundary	75
Sherwin Creek	8/9/05	Above Rd #9337	25
Sherwin Creek	8/9/05	Above Rd #9337	93
Christie Creek	8/9/05	Above Rd #9337	43
Rapid River	11/28/05	Above Hatchery	3
Squaw Creek	11/28/05	Forest Boundary	<3
Bean Creek	11/28/05	Forest Boundary	<3
Bean Creek	11/28/05	Forest Boundary	<3
Cow Creek	11/28/05	Forest Boundary	3

* MPN = Most Probable Number

All samples were below the Idaho secondary contact recreation criterion for E. coli. This criterion applies to all of the sampled streams, except Rapid River, which is designated for primary contact recreation. The Bean Creek sample of August 8, 2005 was the highest single result. The May 16, 2005 round of samples was taken during an active runoff period, with rainfall in progress. The lowest overall results were associated with the November 28, 2005 round of samples.

Channel Characteristics

Streams can be classified according to a system proposed by Rosgen (1996). Channel types classify streams based on observable features that have process and functional implications. Basic characteristics that distinguish channel types include thread, entrenchment (access to floodplains), sinuosity, width to depth ratio, gradient, and substrate size (Rosgen, 1994). Channel types are significant in that various stream types process energy (i.e. water) and sediment in different ways. Channel types can be rated in terms of their sensitivity to disturbance, their resistance to physical changes induced by disturbance, and their resilience in terms of recovering from disturbance. These are stratified by reach, based on and derived from surveys completed in 2005. Associated with channel types are interpretations such as sensitivity, sediment supply, bank erosion, and recovery potential.

Channel types are the result of interactions between climate, geology, landform, watershed size, and disturbance history. Streams tend to exist in a state of dynamic equilibrium with channel features remaining relatively consistent until some type of disturbance (natural or human-induced) changes one or more key variables. If the disturbance is large enough, the channel type itself may be changed.

Channel gradients in the Island assessment area reflect a wide range in overall gradient change. Average gradient for all channels falls within the 20-40%, particularly in the 1st order stream segments. Approximately 50% of each channel lies with the 20-40% gradient range. Deer Creek is the only channel that has the majority of its gradient in the 4-10% category. This is fairly typical of the steep canyon terrain. High gradients in the headwaters and also into the 2nd order segments and then a few short miles where gradients change to the 0-2 % near the mouths. Stream gradient is summarized in Table x.x and displayed on Map x.

Table x.x -Stream Order/Gradient Summary For Mainstem Stream Channels

Watershed HUC # (1987 NPNF Plan)	Stream Name	Order (at mouth)	Percent length within each gradient class							Mainstem Stream Length (miles)
			0-2	2-4	4-10	10-15	15-20	20-40	>40	
170602090401	Deer Creek	4	0	0	0	67	8	25	0	7.4
170602090402	Joe Creek	2	0	0	14	24	63	0	0	2.0
170602090403	Christie Creek	3	3	0	48	48	0	0	0	6.6
170602090404	Sherwin Creek	3	1	0	56	27	15	0	0	6.1
170602090405	China Creek	3	0	0	6	50	30	14	0	5.1

Watershed HUC # (1987 NPNF Plan)	Stream Name	Order (at mouth)	Percent length within each gradient class							Mainstem Stream Length (miles)
			0-2	2-4	4-10	10-15	15-20	20-40	>40	
170602090406	Cow Creek	4	3	0	51	2	24	15	5	5.2
170602090407	Kessler Creek	2	0	0	22	30	11	38	0	4.4
170602090408	S Fk Race Creek	3	0	0	48	30	9	13	0	6.4
170602090409	W Fk Race Creek	4	0	10	63	2	13	8	3	6.7
170602090413	Elfers Creek	3	0	0	0	67	8	25	0	3.7
170602090414	Bean Creek	3	0	0	5	66	0	28	0	3.3
170602100101	Squaw Creek	4	0	6	85	9	0	0	0	5.7
170602100102	Shingle Creek	4	0	0	22	20	18	41	0	5.7
170602100103	Rapid River	5	32	43	25	0	0	0	0	9.9(?)
170602100104	Indian Creek	3	0	0	0	52	16	31	0	2.6
170602100105	W Fk Rapid River	4	12	13	51	7	5	12	0	9.7
170602100106	Papoose Creek	3	0	0	13	51	36	0	0	6.9

Within the Island Assessment area, most channel types are probably currently the same as they were in presettlement periods. Natural disturbances may have occasionally altered channel types from one state to another through erosional and depositional processes. An example of that would be a debris torrent that scours a channel to bedrock. In such a case, the channel type is changed until depositional processes once again refill the valley floor.

A recent example of an apparent natural channel change occurred in Squaw Creek and Papoose Creek during the rain-on-snow flood in January, 1997. This storm event caused significant erosion and aggradation along several miles of both channels. The changes occurred primarily along the sections of the channels that are associated with private land ownerships.

Human disturbances have resulted in some changes channel type changes. Installation of privately owned hydroelectric dams on Shingle Creek and West Fork of Race Creek have altered flow regimes in both channels, as well as depositional areas above and below both sites. Channel changes, if any, are limited to segments directly influenced by the dams. Grazing has also impacted some channels and caused an increased width to depth ratio, reduced bank stability, and increased sediment. Channel changes are most likely associated with those segments directly impacted. Placer mining has occurred on the upper reaches of Graves Creek and has impacted it extensively. Past timber harvest has resulted in increased levels of ECA or maintained ECAs at high levels and effected water yield in some drainages. However, these changes have been constrained to stream segments and have also been relatively quick to recover due to the channel type. HAVE JIM AND SCOTT REVIEW

Riparian Areas and Floodplains

Riparian areas and floodplains play an important role in how material (e.g. sediment or wood) and energy (e.g. flowing water and solar radiation) are processed within the aquatic system, and are disproportionately important to aquatic and terrestrial biota. Riparian areas include streamside and lakeside areas, wetlands, and areas with high groundwater tables. They support vegetation that either seasonally or continuously requires standing or flowing water, thereby providing bank stability and shading along most streams.

Floodplains are also important components of riparian areas, and include low areas adjacent to streams that are periodically inundated when flows exceed bankfull stage. This is typically expected to occur about every one to two years. Floodplains allow for energy dissipation, affect channel morphology, and support riparian vegetation.

The term Riparian Habitat Conservation Areas (RHCAs) was introduced by PACFISH to establish special management direction for these areas (USDA 1994). RHCAs are primarily delineated using fixed widths relative to physically defined features. In addition to riparian areas, wetlands, and floodplains, the full delineation of RHCAs includes landslide-prone areas.

The localized importance of riparian areas can be discussed relative to ALTAs within which they are located.

Relative Abundance of RHCA Area Within Individual ALTAs and the Entire Island Assessment Area

Encroachment by various roads has had the most substantial impacts to instream and streamside conditions along most major channels in the Island assessment area. Most notable impacts to riparian and floodplain processes are likely to occur from roads.

Table x.x - Streamside Condition Indicators

Subwatershed (Proposed NPNF Plan)	Land Owner-ship	Area (acres)	Stream-side (% area)	Stream-side Roads (mi)	Stream-side Rd Density (mi/mi2)	Stream/ Road Cros-sings (#)	Stream-side Harvest (%)
Salmon River – Lucille 170602090301	NPNF	990	1	0.6	4.8	4	0
	Total	7,729	16	7.1	3.5	22	NA
Race Creek 170602090302	NPNF	12,201	9	8.1	3.0	55	2
	Total	18,390	16	21.0	6.9	70	NA
Salmon River - China Creek 170602090303	NPNF	8,437	10	14.4	6.1	49	3
	Total	15,034	19	25.7	5.5	101	NA
Salmon River – Sherwin Creek 170602090305	NPNF	6,665	10	12.8	7.6	38	3
	Total	11,171	17	17.0	3.3	47	NA
Salmon River – Riverview 170602090501	NPNF	1,758	4	3.2	7.6	14	
	Total	7,024	15	10.9	6.4	53	NA
Deer Creek 170602090503	NPNF	3,617	6	2.6	2.7	5	
	Total	10,026	18	19.4	9.1	27	NA
Upper Rapid River 170602100401	NPNF	0	0	0	0	0	0
	Total	26,718	20	0	0	0	NA
Rapid River – Copper Creek	NPNF	0	0	0	0	6	0

Subwatershed (Proposed NPNF Plan)	Land Owner-ship	Area (acres)	Stream-side (% area)	Stream-side Roads (mi)	Stream-side Rd Density (mi/mi2)	Stream/ Road Cros-sings (#)	Stream-side Harvest (%)
170602100402	Total	15,144	20	0.7	0.2	6	NA
West Fork Rapid River 170602100403	NPNF	16,821	13	.19	<0.1	0	0
	Total	22,024	17	.19	<0.1	0	NA
Lower Rapid River 170602100404	NPNF	12,197	10	1.6	0.6	16	1
	Total	16,501	15	10.1	7.3	34	NA
Little Salmon – Pollack 170602100503	NPNF	3,009	5	1.6	2.7	13	1
	Total	8,557	14	11.1	7.8	45	NA
Little Salmon – Riggins 170602100504	NPNF	0	0	0	0	0	0
	Total	2,341	14	3.9	7.5	11	NA
Squaw Creek 170602100505	NPNF	8,227	10	4.3	2.3	17	0
	Total	11,806	15	12	7.7	30	NA

Table XX – Snake River Basin Adjudication Site Data

Prescription Watershed #	Stream Name	Area Above Site (acres)	Gradient (%)	% Fines <6 mm	% Fines <2 mm	D50 (mm)	D84 (mm)
170602090401	Deer Creek	1,126	5.5	28	28	29	110
170602090403	Christie Creek	2,080	7.2	25	20	22	60
170602090404	Sherwin Creek	2,458	10.2	20	20	23	68

Prescription Watershed #	Stream Name	Area Above Site (acres)	Gradient (%)	% Fines <6 mm	% Fines <2 mm	D50 (mm)	D84 (mm)
170602090405	China Creek	3,072	12.2	27	22	29	128
170602090406	Cow Creek	5,504	3.1	1	0	25	69
170602090407	Kessler Creek	2,208	2.6	0	0	38	100
170602090408	S Fk Race Creek	1,619	7.1	6	6	175	245
170602090408	Grave Creek	1,971	6.0	24	21	32	90
170602090409	W Fk Race Creek	2,912	6.3	0	0	47	180
170602100101	Squaw Creek	4,038	3.3	0	0	51	124
170602100102	Shingle Creek	7,962	5.8	2	0	71	220
170602100103	Rapid River	67,840	6.0	11	8	148	630
170602100104	Indian Creek	1,741	8.3	27	0	15	160
170602100106	Lower Papoose Creek	3,123	10.2	81*	67*	<1*	10*
170602100106	Upper Papoose Creek	762	19.3	36	36	22	700

* Stream substrate is composed of calcium carbonate, located below a limestone spring

References

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